

$^7\text{Li}(\alpha,\alpha)$ **1966Cu02,1957Bi84,1954Li48**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, C. G. Sheu		NP A880, 88 (2012)	1-Jan-2011

1954Li48: $^7\text{Li}(\alpha,\alpha')$.1957Bi84: $^7\text{Li}(\alpha,\alpha')$.1966Cu02: $^7\text{Li}(\alpha,\alpha')$ $E = 1.6\text{-}12.0 \text{ MeV}$, measured $\sigma(E;E_{\alpha'},\theta)$. ^{11}B deduced levels, J,π .1969Ma13: $^7\text{Li}(\alpha,\alpha'),(\alpha,\alpha')$ $E = 29.4 \text{ MeV}$, measured $\sigma(E_{\alpha'},\theta)$. Deduced optical model parameters.1971Bi12: $^7\text{Li}(\alpha,\alpha_0)$ $E=12.0\text{-}18.5 \text{ MeV}$, measured $\sigma(E_{\alpha},\theta)$, deduced optical model-parameters.1972Bo07: $^7\text{Li}(\alpha,\alpha),(\alpha,\alpha')$ $E=2.5\text{-}4.5 \text{ MeV}$; 3.0, 3.6, 4.0 MeV, measured $\sigma(E)$, $\sigma(\theta)$; deuteron exchange analyzed. Deduced deuteron width.1973Ke13: $^7\text{Li}(\alpha,\alpha),(\alpha,\alpha')$ $E=8.6\text{-}12.5 \text{ MeV}$, 17.0-22.5 MeV, measured $\sigma(E,E_{\alpha'},\theta)$.1979St25: $^7\text{Li}(\alpha,\alpha)$ $E=1.36\text{-}3.2 \text{ MeV}$, measured $\sigma(\theta)$. ^{11}B deduced resonances, J, π, Γ, α -reduced width. R-matrix formalism.1982Wa23: $^7\text{Li}(\alpha,\alpha)$ $E=5, 6 \text{ MeV}$, measured $\sigma(\theta)$. Deduced glory scattering effect.1994Ha16: $^7\text{Li}(\alpha,\alpha)$ $E=65 \text{ MeV}$, measured spectra, $\sigma(\theta)$. Deduced model parameters.1996Bu06: $^7\text{Li}(\alpha,\alpha),(\alpha,\alpha')$ $E=50.5 \text{ MeV}$, measured $\sigma(\theta)$. DWBA analysis.2003Ru01: $^7\text{Li}(\alpha,\alpha),(\alpha,\alpha')$ $E_{C.M.}=11.45, 16.55 \text{ MeV}$, measured $\sigma(\theta)$. Deduced reaction mechanism features.2008BuZV: $^7\text{Li}(\alpha,\alpha)$, $E=72 \text{ MeV}$, measured $\sigma(\theta)$. ^{11}B Levels

E(level)	J^π	$T_{1/2}$	Comments
9872 4	$3/2^+$	130 keV 30	E(level): from $E_{\text{res}}=1.92 \text{ MeV}$ 3 (1966Cu02), $E_{\text{res}}=1889 \text{ keV}$ 10 (1954Li48), $E_{\text{res}}=1910 \text{ keV}$ 20 (1957Bi84), $E_{\text{res}}=1900 \text{ keV}$ 10 (1967Pa19). Γ : from discussion and R-matrix fit In (1966Cu02) see from $\Gamma=130 \text{ keV}$ 30 (1966Cu02) and $\Gamma=125 \text{ keV}$ 10 (1954Li48).
10.25×10^3 2	$3/2^{(-)}, 1/2$	150 keV 40	E(level): from $E_{\text{res}}=2.48 \text{ MeV}$ 5 (1966Cu02), $E_{\text{res}}=2500 \text{ keV}$ 30 (1954Li48), $E_{\text{res}}=2490 \text{ keV}$ 50 (1957Bi84). Γ : from discussion and R-matrix fit In (1966Cu02) see $\Gamma=150 \text{ keV}$ 40 (1966Cu02) and $\Gamma \approx 155 \text{ keV}$ (1954Li48).
10.34×10^3 2	$(5/2^-, 7/2^-)$	80 keV 30	E(level): from $E_{\text{res}}=2.63 \text{ MeV}$ 3 (1966Cu02). Γ : from discussion and R-matrix fit In (1966Cu02).
10598 5	$7/2^+$	70 keV 10	E(level): from $E_{\text{res}}=3032 \text{ keV}$ 10 (1966Cu02), $E_{\text{res}}=3060 \text{ keV}$ 30 (1957Bi84), 3040 keV 10 (1967Pa19). Γ : from discussion and R-matrix fit In (1966Cu02).
10.96×10^3 3	$5/2^-$	$\approx 4.5 \text{ MeV}$	E(level): from $E_{\text{res}}=3.60 \text{ MeV}$ 5 (1966Cu02), Γ : from $^7\text{Li}(\alpha,\alpha)$; the text gives two plausible values, first Table 1 “Anomolies in the scattering” gives the value $\Gamma > 0.9 \text{ MeV}$, however Table 2 describes parameters from a seven level fit to the data where $\Gamma \approx 4.5 \text{ MeV}$ is given. $E_{\text{res}}=3.60 \text{ MeV}$ 10 (1957Bi84). Γ : from discussion and R-matrix fit In (1966Cu02).
11.29×10^3 2	$9/2^+$	90 keV 50	E(level): from $E_{\text{res}}=4.12 \text{ MeV}$ 3 (1966Cu02). Γ : from discussion and R-matrix fit In (1966Cu02).
11.48×10^3 3		70 keV 30	E(level): from $E_{\text{res}}=4.43 \text{ MeV}$ 5 (1966Cu02). Γ : from (1966Cu02). $^{10}\text{B}+\text{N}$ threshold.
11.59×10^3 3		150 keV 50	E(level): from $E_{\text{res}}=4.60 \text{ MeV}$ 5 (1966Cu02). Γ : from (1966Cu02).
11.88×10^3 2		150 keV 50	E(level): from $E_{\text{res}}=5.05 \text{ MeV}$ 3 (1966Cu02). Γ : from (1966Cu02).
12.04×10^3 13		$\approx 1 \text{ MeV}$	E(level): from $E_{\text{res}}=5.30 \text{ MeV}$ 20 (1966Cu02). Γ : from (1966Cu02).
12.16×10^3 6		60 keV 50	E(level): from $E_{\text{res}}=5.50 \text{ MeV}$ 10 (1966Cu02). Γ : from (1966Cu02). $^{10}\text{B}+\text{N}_1$ threshold.

Continued on next page (footnotes at end of table)

$^7\text{Li}(\alpha,\alpha)$ 1966Cu02,1957Bi84,1954Li48 (continued)

^{11}B Levels (continued)

E(level)	T _{1/2}	Comments
12.55×10^3 2	150 keV 50	E(level): from E _{res} =6.10 MeV 3 (1966Cu02). Γ: from (1966Cu02).
13.02×10^3 4	270 keV 50	E(level): from E _{res} =6.85 MeV 6. Γ: from (1966Cu02).
13.25×10^3 3	50 keV 50	E(level): from E _{res} =7.20 MeV 5 (1966Cu02). Γ: from (1966Cu02). $^{10}\text{B} + \text{N}_2$ threshold.
13.63×10^3 6	0.50 MeV 20	E(level): from E _{res} =7.80 MeV 10 (1966Cu02). Γ: from (1966Cu02). $^{10}\text{B} + \text{N}_3$ threshold.
14.04×10^3 ? 13	0.50 MeV 20	E(level): from E _{res} =8.45 MeV 20 (1966Cu02). Γ: from (1966Cu02).
14.68×10^3 ? 13	<250 keV	E(level): from E _{res} =9.45 MeV 20 (1966Cu02). Γ: from (1966Cu02).
15.00×10^3 13	0.50 MeV 20	E(level): from E _{res} =9.95 MeV 20 (1966Cu02). Γ: from (1966Cu02). $^{10}\text{B} + \text{N}_4$ threshold.
15.79×10^3 ? 13	0.18 MeV 10	E(level): from E _{res} =11.20 MeV 20 (1966Cu02). Γ: from (1966Cu02).